

IMPROVED DAMASCENE METHOD FOR FORMING WRITE COILS OF MAGNETIC HEADS

ABSTRACT OF THE DISCLOSURE

5 An improved damascene method of forming a write coil of a magnetic head includes forming a hard mask layer over an insulator layer; forming a photoresist layer over the hard mask layer; performing an image patterning process to produce a write coil pattern in the photoresist layer; etching to remove portions of the hard mask layer in accordance with the write coil pattern; etching to remove portions of the insulator layer in
10 accordance with the write coil pattern; etching to remove the remaining portion of the etched hard mask layer; electroplating a material comprising copper (Cu) within the etched portion of the insulator material; and performing a chemical-mechanical polishing (CMP) process over the resulting structure. By removing the remainder of the hard mask material before the CMP, the quality of the CMP is improved. Although any suitable
15 hard mask material may be utilized, if the insulator layer is a hard-baked resist then Ta₂O₅ having a relatively high selectivity, low brittleness, and improved adhesion is preferred as the hard mask material.